

Institute of Paper Science and Technology
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CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 122

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

September 1, 1957

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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In conjunction with the F.K.I. Continuous Baseline Study, The Institute of Paper Chemistry has been directed to identify the participating mills by means of a scrambled system of code letters. Under this system, which was initiated in Progress Report 105, each mill is identified by a code letter different from that used for the previous month.

During the period from August 1 to August 31, ninety-eight different sample lots of 42-lb. Fourdrinier kraft linerboard were submitted by fifteen different F.K.I. mills to The Institute of Paper Chemistry for testing. A tabulation of the number of samples classified according to mill may be seen in Table I.

TABLE I
DISTRIBUTION OF 42-LB. LINERBOARD SAMPLES

Mill Code	Samples Submitted
A	1
B	4
C	0
D	6
E	8
F	0
G	0
H	10
I	9
J	3
K	8
L	7
M	11
N	8
O	8
P	3
Q	8
S	<u>4</u>
Total	98

These sample lots were tested for basis weight, caliper, bursting strength, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 5. In addition to a comparison of the mill averages for the various tests, Table II also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. The cumulative F.K.I. average is based on the results for the previous twelve months excluding the current period. Hence, in the case of the current report, it covers the period from August 1, 1956 to July 31, 1957. The F.K.I. indexes are obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

The F.K.I. index provides a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 42.7 lb., and the cumulative F.K.I. average basis weight is 43.1 lb. Hence, the index for basis weight determined in per cent as indicated above is 99.1. This signifies that the current average basis weight is slightly lower than the cumulative average.

A comparison of the results in Table II and Figure 1 shows that the average basis weight results for all mills except B conform to the 42-lb. specification set forth in Rule 41. Mill S had the highest average basis weight, it being 44.0 lb. or approximately 4.8% higher than the 42-lb. specification. On the other hand, Mill B had the lowest average basis weight, it being 41.6 lb. or 1.0% lower than the 42-lb. specification.

The amount by which the mills vary from the 42-lb. specification is as follows:

Mill Code	Per Cent
A	+1.9
B	-1.0
C	--
D	+0.7
E	+1.9
F	--
G	--
H	+0.5
I	+2.1
J	+1.9
K	+2.6
L	+1.7
M	+3.6
N	+0.5
O	+1.2
P	+2.6
Q	+1.4
S	+4.8

A comparison of the average basis weight data for the previous period with the current F.K.I. average indicated that the basis weight results have decreased slightly from 42.8 lb. to 42.7 lb.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the mill averages varied from a low of 11.8 points for Mill B to a high of 13.7 points for Mill A. The current F.K.I. average is 12.8 points, which is slightly higher than the cumulative F.K.I. average of 12.7 points.

The average bursting strength values obtained for each mill are graphically presented in Figure 3. It may be observed in Table II and Figure 3 that the average bursting strength values for the various mills range from a low of 100 for Mill J to a high of 119 for Mill O.

The current F.K.I. average bursting strength is 111 p.s.i. g., slightly higher than the cumulative F.K.I. average of 110 p.s.i. g. as indicated by the F.K.I. index of 100.9%.

A graphic comparison of the Elmendorf tear results for the various mills is given in Figures 4 and 5. The data of Table II show that Mill P had the highest average machine direction tear value of 366 g./sheet, whereas Mill S had the lowest value of 298 g./sheet. It may be noted also that Mill P had the highest cross-machine direction tear value of 387 g./sheet and Mill B had the lowest value of 327 g./sheet. It may be noted that the current F.K.I. machine and cross-machine direction tear averages are slightly lower than the corresponding cumulative F.K.I. averages.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. averages for basis weight, machine and cross-machine direction tear are slightly lower than the corresponding cumulative F.K.I. averages, whereas the current F.K.I. averages for caliper and bursting strength are somewhat higher than the cumulative averages.

In order to compare the variation within a given mill, the test results for each particular mill have been tabulated in Tables III to XX for Mills A and S, respectively.

The results obtained on special drum stock are presented in Table XXI.

In addition to the current and cumulative averages, the mill factor and mill index are given for each mill. The cumulative mill average

is the average test result obtained on the samples submitted by the particular mill for the previous twelve months excluding the current period. The mill factor and the mill index are obtained as follows:

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor } (\%)$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index } (\%)$$

The mill factor and the mill index are a convenient means for comparing the current mill results either with the previous results for that particular mill or with the cumulative F.K.I. results. The reports also present a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry. These test data are presented and discussed on subsequent pages of this report.

It may be noted in Tables III through XXI that the test data include information about the sheet finish. The summarized results for the mills which submitted sample lots during the current period are as follows:

Mill Code	No. of Sample Lots		
	W.F.	D.F.	Misc.
A	1 ^a		
B	4		
C	No samples submitted.		
D	6		
E	8 ^a		
F	No samples submitted.		
G	No samples submitted.		
H	10 ^a		
I	9		
J	3		
K	8		
L	7 ^a		
M	11		
N	8		
O	6		

Mill Code	No. of Sample Lots		
	W.F.	D.F.	Misc.
P	3		
Q	8		
S	4		
R ^c	No samples submitted		

^aOne side only.

^bUnidentified as to finish.

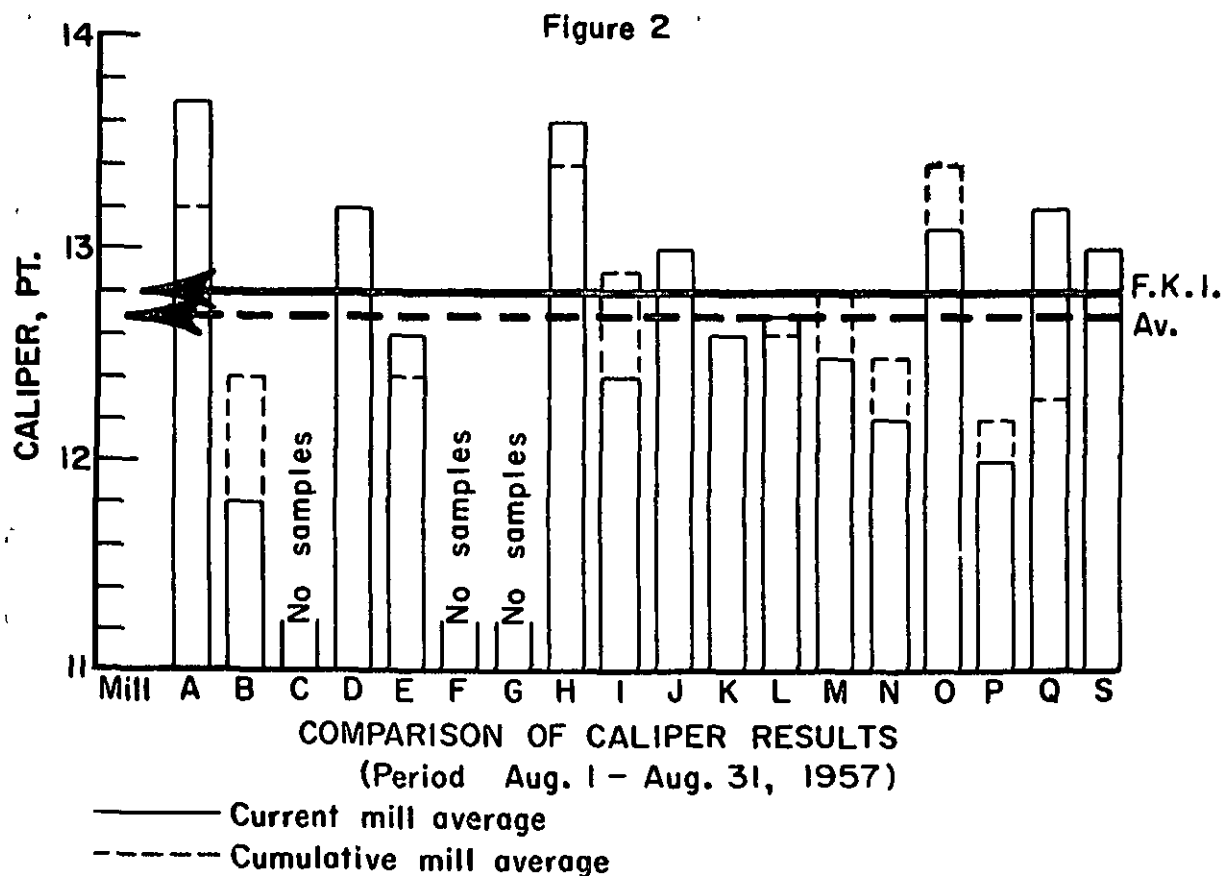
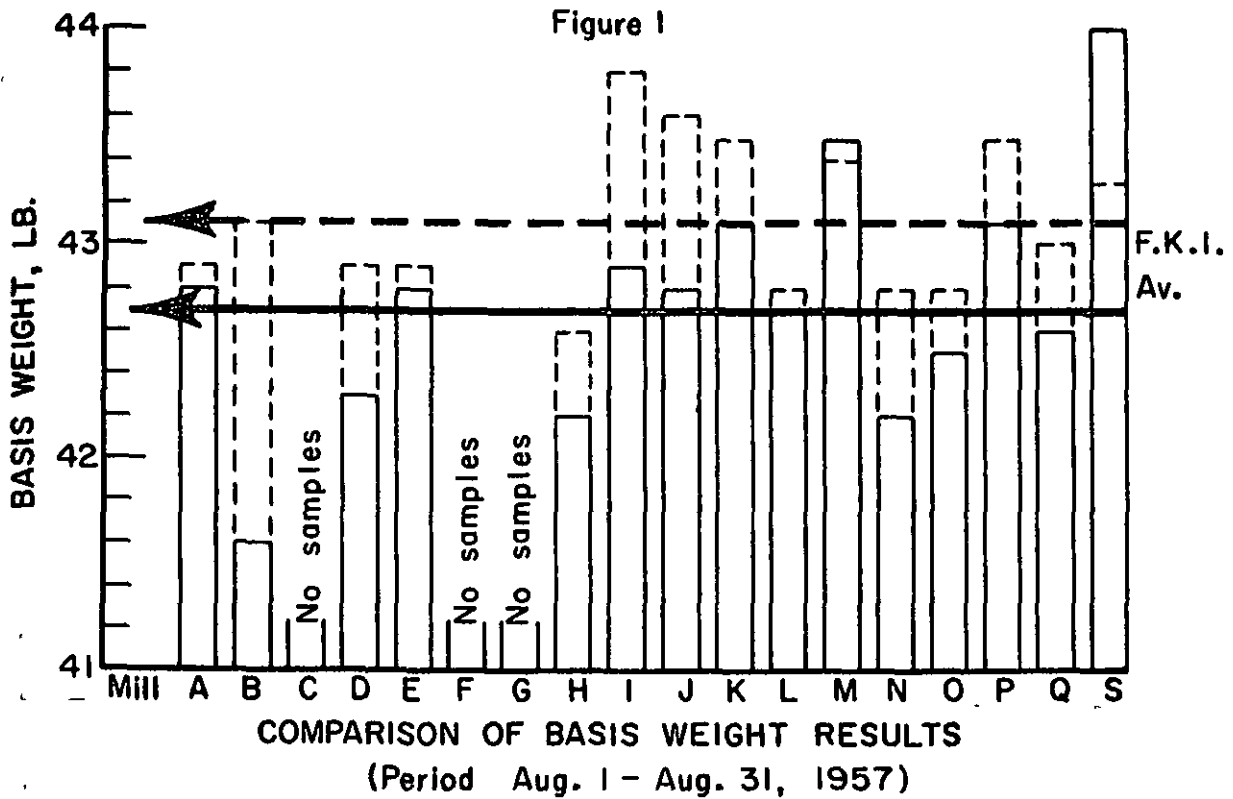
^cDrum linerboard.

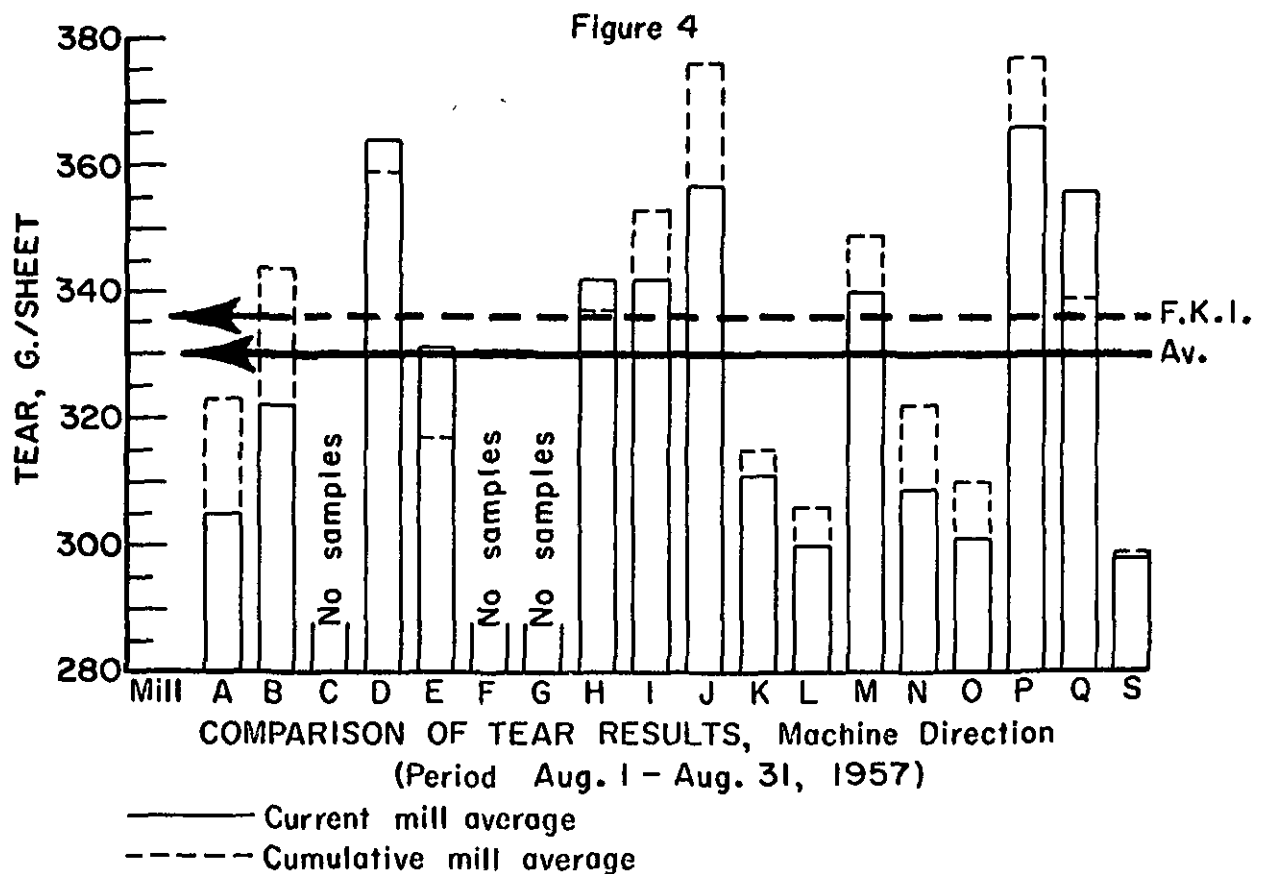
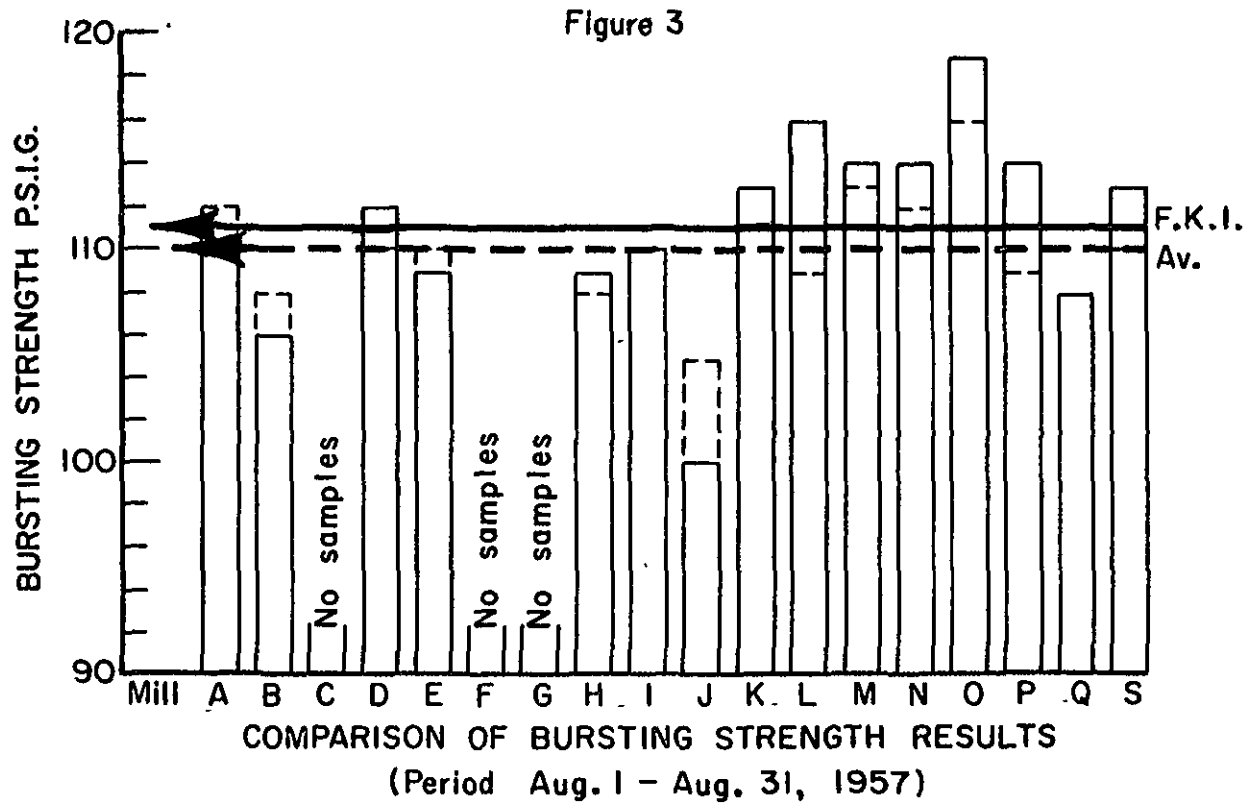
The results indicate that all participating mills are using
a water finish on their 42-lb. linerboard.

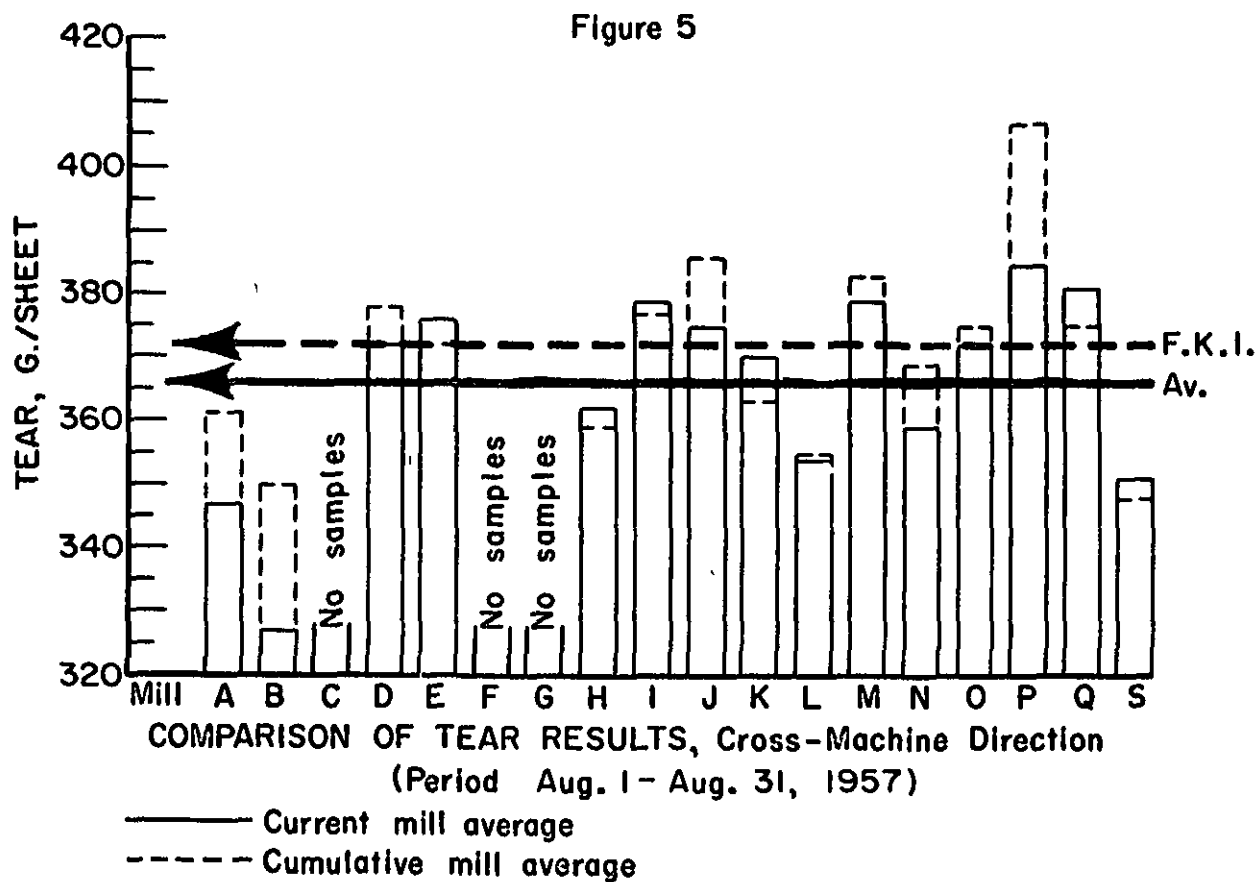
TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES--AUGUST 1, THROUGH AUGUST 31, 1957

MILL	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	42.8	13.7	110	305	347
B	41.6	11.8	106	322	327
C	No samples submitted.				
D	42.3	13.2	112	364	372
E	42.8	12.6	109	331	376
F	No samples submitted.				
G	No samples submitted.				
H	42.2	13.6	109	342	362
I	42.9	12.4	110	342	379
J	42.8	13.0	100	357	375
K	43.1	12.6	113	311	370
L	42.7	12.7	116	300	354
M	43.5	12.5	114	340	379
N	42.2	12.2	114	309	359
O	42.5	13.1	119	301	372
P	43.1	12.0	114	366	385
Q	42.6	13.2	108	356	381
S	44.0	13.0	113	298	351
Current FKI Average:	42.7	12.8	111	330	366
Cumulative FKI Average:	43.1	12.7	110	336	372
FKI Index, %	99.1	100.8	100.9	98.2	98.4







SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957

TABLE III

MILL A -- 42-LB. LINERBOARD

File No	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, Points		Bursting Strength, p.s.i.		Elmendorf Tear, g./sheet								
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.			
175441	WFLS	8/19/57	8/10/57	1	43.8	41.8	42.8	14.2	13.0	13.7	135	88	110	352	272	305 ^a	376	288	347 ^a
Current Mill Average							42.8			13.7			110			305			347
Cumulative Mill Average:							42.9			13.2			112			323			361
Mill Factor, %							99.8			103.8			98.2			94.4			96.1
Mill Index, %							99.3			107.9			100.0			90.8			93.3

TABLE IV

MILL B -- 42-LB. LINERBOARD

175212	W.F.	8/ 1/57	7/18/57	-	42.0	40.4	40.9	12.4	11.0	11.7	116	65	96	400	272	324	352	288	316 ^a
175213	W.F.	8/ 1/57	7/18/57	-	43.4	40.8	41.8	13.0	11.1	12.0	115	80	97	368	272	327 ^a	384	272	331 ^a
175392	W.F.	8/15/57	7/31/57	-	43.2	40.8	42.0	12.1	11.0	11.7	130	95	113	360	272	334 ^a	368	288	329 ^a
175393	W.F.	8/15/57	8/ 1/57	-	43.4	40.0	41.8	12.5	11.0	11.9	136	96	116	352	248	305 ^a	368	304	333 ^a
Current Mill Average:							41.6		11.8			106			322			327	
Cumulative Mill Average:							43.1		12.4			108			344			350	
Mill Factor, %							96.5		95.2			98.1			93.6			93.4	
Mill Index, %							96.5		92.9			96.4			95.8			87.9	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE V

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	In	Across

No samples submitted.

TABLE VI

MILL D -- 42-LB. LINERBOARD

175199	W	8/ 1/57	7/ 1/57	4	43.8	41.6	42.9	14.0	13.0	13.7	120	101	111	408	312	361 ^a	392	312	361 ^a	
175200	W	8/ 1/57	7/ 8/57	2	43.2	41.0	42.2	13.7	12.9	13.2	130	100	111	400	304	353	416	336	372 ^a	
175239	W	8/ 5/57	7/24/57	4	43.4	40.8	42.2	13.6	12.6	13.0	121	88	109	448	368	397 ^a	416	320	369 ^a	
175240	W.	8/ 5/57	7/29/57	2	43.0	40.2	41.8	13.3	12.2	12.8	128	98	110	432	336	373	400	352	372 ^a	
175442	W.	8/19/57	8/ 1/57	2	43.2	40.8	42.0	13.8	12.6	13.0	129	93	113	440	304	347	416	352	397 ^a	
175443	W.	8/19/57	8/ 6/57	4	43.2	41.4	42.4	13.9	12.9	13.3	131	90	116	400	304	350 ^a	408	320	361 ^a	
Current Mill Average.					42.3		13.2		13.2		112		110		364		372		372	
Cumulative Mill Average.					42.9		13.2		13.2		110		110		359		378		378	
Mill Factor, %					98.6		100.0		100.0		101.8		101.8		101.4		98.4		98.4	
Mill Index, %					98.1		103.9		103.9		101.8		101.8		108.3		100.0		100.0	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE VII
MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
175203	WFLS	8/ 1/57	7/22/57	1	43.6	42.0	13.4	12.4	122	80	102	384
175204	WFLS	8/ 1/57	7/23/57	1	43.8	42.0	13.3	12.2	122	88	105	352
175233	WFLS	8/ 5/57	7/26/57	1	42.4	41.6	12.2	11.8	129	76	109	336
175234	WFLS	8/ 5/57	7/30/57	1	42.6	41.6	12.3	11.3	125	91	112	352
175450	WFLS	8/20/57	8/15/57	1	42.6	41.2	12.0	11.3	142	95	112	344
175471	WFLS	8/26/57	8/19/57	1	44.0	42.4	13.5	12.3	130	87	109	400
175472	WFLS	8/26/57	8/20/57	1	44.2	42.0	13.2	12.4	130	93	108	400
175473	WFLS	8/26/57	8/20/57	1	44.0	42.4	13.1	12.9	131	90	112	384
Current Mill Average:					42.8		12.6		109		331	
Cumulative Mill Average:					42.9		12.4		110		317	
Mill Factor, %					99.8		101.6		99.1		104.4	
Mill Index, %					99.3		99.2		99.1		98.5	

TABLE VIII
MILL F -- 42-LB. LINERBOARD

No samples submitted.

This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE IX

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.

No samples submitted.

TABLE X

MILL H -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
175205	WFLS	8/ 1/57	7/16/57	2	43.0	40.4	41.6	14.1	12.9	13.5	126	90
175206	WFLS	8/ 1/57	7/23/57	2	43.8	42.0	43.0	14.9	13.8	14.1	126	99
175207	WFLS	8/ 1/57	7/24/57	2	41.0	40.0	40.3	13.9	12.8	13.3	110	84
175216	WFLS	8/ 2/57	7/24/57	2	43.0	41.4	42.0	14.2	13.1	13.6	117	86
175217	WFLS	8/ 2/57	7/25/57	2	43.8	42.0	43.0	14.9	13.1	14.1	123	86
175218	WFLS	8/ 2/57	7/26/57	2	41.8	40.2	41.0	13.7	12.9	13.2	120	94
175456	WFLS	8/22/57	7/28/57	2	43.2	41.4	42.2	14.2	13.0	13.6	137	93
175457	WFLS	8/22/57	8/ 1/57	2	43.2	41.2	42.0	13.7	12.8	13.2	138	85
175465	WFLS	8/23/57	8/ 8/57	2	43.6	41.6	42.6	14.2	12.6	13.3	134	81
175466	WFLS	8/23/57	8/14/57	2	44.6	43.4	44.0	14.9	13.6	14.2	136	101
Current Mill Average:					42.2			13.6			109	
Cumulative Mill Average:					42.6			13.4			108	
Mill Factor, %					99.1			101.5			100.9	
Mill Index, %					97.9			107.1			99.1	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XI

MILL I -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i., gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
175230	W.F.	8/5/57	7/31/57	-	42.2	41.8	42.0	13.3	12.1	12.7	118	88	104	352	288	324
175231	W.F.	8/5/57	8/1/57	-	44.0	42.0	43.2	13.1	12.3	12.8	125	91	107	384	336	361 ^a
175232	W.F.	8/5/57	8/2/57	-	44.6	43.8	44.2	12.6	12.1	12.2	123	90	105	368	288	325
175389	W.F.	8/15/57	8/7/57	-	46.0	44.6	45.2	13.5	12.4	13.0	137	89	113	408	320	348
175390	W.F.	8/15/57	8/8/57	-	42.6	41.6	41.9	12.2	11.0	11.8	124	102	114	416	304	344 ^a
175391	W.F.	8/15/57	8/9/57	-	43.8	42.0	43.0	12.9	11.9	12.3	129	87	110	400	288	337 ^a
175451	W.F.	8/21/57	8/14/57	-	42.8	42.0	42.3	12.3	11.6	12.0	128	102	117	432	320	361 ^a
175452	W.F.	8/21/57	8/15/57	-	42.6	42.0	42.3	12.6	11.7	12.2	128	105	114	400	304	351 ^a
175453	W.F.	8/21/57	8/16/57	-	43.0	41.6	42.1	12.6	11.9	12.1	132	95	109	392	288	327 ^a
Current Mill average:					42.9			12.4			110			342		
Cumulative Mill Average:					43.8			12.9			110			353		
Mill Factor, %					97.9			96.1			100.0			96.9		
Mill Index, %					99.5			97.6			100.0			101.8		

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XII

MILL J -- 42-LB. LINERBOARD

File no.	Finish	Date Reco.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I.			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
175209	S.F.	8/1/57	7/22/57	7	44.4	42.0	43.0	13.6	12.2	12.9	117	78	96	368	304	336 ^a
175362	S.F.	8/13/57	8/6/57	7	43.8	41.8	42.6	13.8	12.4	13.1	130	84	106	480	336	377 ^a
175467	S.F.	8/23/57	8/15/57	7	45.4	41.8	42.9	14.2	12.4	13.2	120	75	97	408	320	357 ^a
Current Mill Average:					42.8			13.0			100			357		
Cumulative Mill Average					43.6			13.0			105			376		
Mill Factor, %					98.2			100.0			95.2			94.9		
Mill Index, %					99.3			102.4			90.9			106.2		

^a This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XIII

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	In	Across
175210	W.F.	8/1/57	7/21/57	2	44.0	42.8	13.2	12.3	128	97	111	360
175211	W.F.	8/1/57	7/22/57	2	44.0	43.4	13.0	12.1	130	102	115	368
175244	W.F.	8/6/57	7/29/57	1	42.4	41.2	13.0	11.8	124	97	111	360
175245	W.F.	8/6/57	7/29/57	2	43.6	42.2	12.8	12.0	122	87	109	312
175347	W.F.	8/12/57	8/4/57	2	43.6	42.6	13.2	12.5	128	94	115	400
175348	W.F.	8/12/57	8/4/57	2	43.6	42.0	13.0	12.4	130	92	112	352
175448	W.F.	8/20/57	8/11/57	2	43.8	42.6	13.2	12.0	127	98	114	384
175449	W.F.	8/20/57	8/11/57	2	44.4	43.0	13.2	12.0	143	92	115	320
Current Mill Average:					43.1		12.6		113		311	370
Cumulative Mill Average:					43.5		12.6		111		315	363
Mill Factor, %					99.1		100.0		101.8		98.7	101.9
Mill Index, %					100.0		99.2		102.7		92.6	99.5

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XIV

MILL L -- 42-LB. LINERBOARD

File No	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	In			Across		
175235	WFLS	8/ 5/57	7/27/57	1	45.0	43.2	44.1	14.1	12.8	13.4	132	94	114	392	256	319 ^a	416	312	345 ^a
175236	WFLS	8/ 5/57	7/29/57	1	45.2	41.0	42.6	14.0	12.1	12.9	138	101	118	336	224	300	408	328	352 ^a
175237	WFLS	8/ 5/57	7/30/57	1	44.0	42.2	43.0	13.0	12.0	12.4	146	106	124	376	272	301	416	328	351 ^a
175335	WFLS	8/12/57	8/ 5/57	3	42.4	41.0	41.7	12.7	12.0	12.2	137	84	114	408	256	296	368	304	341 ^a
175336	WFLS	8/12/57	8/ 6/57	1	44.0	40.0	42.0	12.9	12.0	12.2	150	98	117	320	256	279 ^a	384	312	342 ^a
175337	WFLS	8/12/57	8/ 7/57	1	43.8	41.8	42.6	12.6	12.0	12.2	134	93	112	368	232	281 ^a	376	312	337 ^a
175423	WFLS	8/16/57	8/13/57	1	44.8	42.0	43.1	14.0	12.9	13.4	132	100	114	384	288	324	496	384	408 ^a
Current Mill Average:							42.7			12.7			116			300			354
Cumulative Mill Average:							42.8			12.6			109			306			355
Mill Factor, %							99.8			100.8			106.4			98.0			99.7
Mill Index, %							99.1			100.0			105.5			89.3			95.2

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XV

MILL M -- 42-LB. LINERBOARD

File No	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
175208	W.F.	8/ 1/57	7/23/57	-	45.8	44.2	13.6	12.4	125	94	432	352
175219	W.F.	8/ 2/57	7/25/57	-	44.4	41.8	12.7	11.5	130	96	400	351
175241	W.F.	8/ 5/57	7/28/57	-	44.0	41.0	12.9	11.8	128	80	368	325
175242	W.F.	8/ 5/57	7/27/57	-	44.0	40.4	13.0	11.8	131	98	416	320
175243	W.F.	8/ 5/57	7/27/57	-	46.6	44.0	13.0	12.1	147	100	432	356
175351	W.F.	8/12/57	7/30/57	-	44.8	42.0	13.8	12.4	131	84	400	272
175352	W.F.	8/12/57	7/30/57	-	44.0	42.0	13.0	12.0	141	100	344	264
175353	W.F.	8/12/57	8/ 5/57	-	44.4	42.0	12.8	11.5	134	98	368	280
175354	W.F.	8/12/57	8/ 6/57	-	45.6	43.0	13.0	11.8	131	102	432	296
175355	W.F.	8/12/57	8/ 6/57	-	44.6	42.8	13.0	11.8	132	85	400	280
175470	W.F.	8/26/57	8/ 9/57	-	44.2	42.0	13.0	11.6	135	97	384	312
Current Mill Average:					43.5		12.5		114		340	
Cumulative Mill Average:					43.4		12.8		113		349	
Mill Factor, %					100.2		97.7		100.9		97.4	
Mill Index, %					100.9		98.4		103.6		101.2	

aThis average includes the readings for one or more specimens which tors beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XVI

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i.			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
175214	W.F.	8/ 1/57	7/16/57	2	42.4	41.2	42.0	12.5	11.0	11.9	128	92	115	328	280	303
175215	W.F.	8/ 1/57	7/16/57	2	43.6	41.6	42.3	13.0	11.5	12.0	135	92	112	360	280	313 ^a
175248	W.F.	8/ 6/57	7/25/57	2	43.6	41.2	42.8	13.0	11.8	12.3	150	88	118	344	256	305 ^a
175249	W.F.	8/ 6/57	7/27/57	2	42.6	41.4	42.1	12.9	11.7	12.2	140	92	115	400	272	317
175365	W.F.	8/13/57	7/27/57	2	43.2	41.2	42.5	12.8	11.9	12.3	142	86	116	360	272	304
175366	W.F.	8/13/57	7/29/57	2	43.2	41.6	42.3	13.0	11.9	12.3	142	87	114	376	296	319 ^a
175367	W.F.	8/13/57	8/ 2/57	2	42.6	40.4	41.8	12.7	11.9	12.2	132	97	114	368	272	315
175368	W.F.	8/13/57	8/ 5/57	2	42.0	41.0	41.6	12.9	11.9	12.3	125	92	111	320	272	296
Current Mill Average:					42.2			12.2			114			309		
Cumulative Mill Average:					42.8			12.5			112			322		
Mill Factor, %					98.6			97.6			101.8			96.0		
Mill Index, %					97.9			96.1			103.6			92.0		

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XVII
MILL 0 -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I., gage		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
175349	W.F.	8/12/57	6/25/57	1	44.0	41.6	14.2	13.0	127	82	108	320 ^a
175350	W.F.	8/12/57	6/30/57	1	44.4	43.0	14.0	12.7	142	102	123	312
175444	W.F.	8/19/57	7/25/57	1	44.2	43.0	14.2	13.1	143	104	124	317
175445	W.F.	8/19/57	7/27/57	1	42.2	41.0	13.0	11.3	135	100	117	304
175446	W.F.	8/20/57	7/30/57	1	42.8	41.8	14.2	12.9	149	95	126	276
175447	W.F.	8/20/57	8/2/57	1	42.0	41.0	13.7	12.3	141	83	115	297 ^a
175474	----	8/27/57	8/5/57	-	43.2	41.2	13.3	11.6	143	98	122	288
175475	----	8/27/57	8/8/57	-	42.8	41.0	13.4	12.2	144	92	119	299 ^a
Current Mill Average:					42.5		13.1		119		301	
Cumulative Mill Average:					42.8		13.4		116		310	
Mill Factor, %					99.3		97.8		102.6		97.1	
Mill Index, %					98.6		103.1		108.2		89.6	

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight,			Caliper,			Bursting Strength,			Elmendorf Tear,					
					lb.		points	Max. Min.		Max. Min.	Max. Min.	Max. Min.	Max. Min.	g./sheet	Across				
					Max.	Min.		Max.	Min.						Max.	Min.	Max.	Min.	
175238	W.B.	8/ 5/57	7/20/57	-	45.0	43.2	44.2	12.9	11.9	12.2	131	98	116	416	328	357 ^a	408	344	374 ^a
175272	W.B.	8/ 8/57	7/26/57	-	44.4	40.0	42.4	12.0	11.1	11.6	141	100	118	400	320	375 ^a	448	320	385 ^a
175273	W.B.	8/ 8/57	7/27/57	-	43.8	41.2	42.6	12.7	11.8	12.2	127	97	108	416	336	365	432	352	396 ^a
Current Mill Average							43.1			12.0			114			366			385
Cumulative Mill Average.							43.5			12.2			109			377			407
Mill Factor, %							99.1			98.4			104.6			97.1			94.6
Mill Index, %							100.0			94.5			103.6			108.9			103.5

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XIX

MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.S.I.		Elmendorf Tear, g./sheet	
					Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
175201	W.F.	8/ 1/57	7/21/57	2	42.4	41.6	13.8	13.2	120	80	432	352
175202	W.F.	8/ 1/57	7/22/57	2	43.6	42.0	14.0	13.0	130	80	432	320
175246	W.F.	8/ 6/57	7/28/57	2	43.0	41.8	12.9	12.0	130	92	400	320
175247	W.F.	8/ 6/57	7/29/57	2	42.4	41.0	13.4	11.8	144	92	368	320
175363	W.F.	8/13/57	8/ 4/57	2	43.6	42.2	13.9	13.0	125	82	400	328
175364	W.F.	8/13/57	8/ 5/57	2	42.4	40.4	13.9	13.0	138	78	392	344
175454	W.F.	8/21/57	8/12/57	2	45.0	43.2	13.9	13.0	130	78	432	352
175455	W.F.	8/21/57	8/13/57	2	44.6	43.2	13.9	13.1	133	80	448	328
Current Mill Average:					42.6		13.2				356	381
Cumulative Mill Average:					43.0		12.3				339	375
Mill Factor, %					99.1		107.3				105.0	101.6
Mill Index, %					98.8		103.9				106.0	102.4

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XX

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I., gage			Elmendorf Tear, g./sheet		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
175198	W.F.	8/ 1/57	7/23/57	1	45.0	43.6	44.2	13.2	12.1	13.0	135	93	113	376	272	309 ^a
175274	W.F.	8/ 8/57	7/29/57	1	44.6	43.4	44.0	13.5	12.6	13.0	135	95	114	360	232	297 ^a
175275	W.F.	8/ 8/57	8/ 2/57	1	45.0	43.2	44.0	13.8	12.4	13.0	125	94	112	328	232	286 ^a
175361	W.F.	8/13/57	8/ 6/57	1	44.0	43.6	43.8	13.7	12.8	13.1	134	97	113	352	272	299
Current Mill Average:					44.0			13.0			113			298		
Cumulative Mill Average:					43.3			12.8			110			299		
Mill Factor, %					101.6			101.6			102.7			99.7		
Mill Index, %					102.1			102.4			102.7			88.7		

TABLE XXI

MILL R -- 47-LB. DRUM LINERBOARD

No samples submitted.

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. As may be noted in Table XXII, the atmospheric conditions used prior to and during the testing period were relatively uniform for the mills which reported this information. However, the conditioning periods varied considerably.

TABLE XXII

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A		None		70	86	—
B		None		50-53	73	0.5
C			No samples submitted.			
D		None		52	72	--
E		None		51-58	64-74	--
F			No samples submitted.			
G			No samples submitted.			
H	50	72-73	24		None	
I	36	78	8	51-53	73-74	16
J	50	73	24		None	
K		None		50	73	24
L	64-70	75-78	24-72	58-70	74-78	1-1.5
M		None		50	73	2-120
N	50	73	24	50	73	24
O		None		69-88	78-96	---
P		None		50-52	71-72	48
Q		None		50	73	24
S	45-48	74-78	0.5	50	73	24-48

A summary of the Institute and mill test results for the current period is shown in Table XXIII, and a comparison of differences between Institute and mill test results is given in Table XXIV for the

current period and the two previous periods. The comparisons are given in Tables XXV to XLII, for the 42-lb. liner samples. A comparison of the special drum stock is given in Table XLIII. In all the comparisons given in Tables XXV to XLIII, the Institute's test values have been used as the reference line.

A comparison of the test data in Tables XXIII and XXIV reveals the level of agreement between mill and Institute data for basis weight, caliper, bursting strength, and Elmendorf tear. Table XXIII shows the average difference between Institute and mill test results for all sample lots submitted by each mill for the current period. In addition, the maximum difference encountered in comparing the Institute and mill test results for a given sample lot is shown. In Table XXIV, the average differences shown for each test in Table XXIII have been calculated on a percentage basis for each mill. In addition, for purposes of comparison, the average percentage differences for the preceding two periods are shown.

It may be noted in Table XXIV that the maximum variation between the average basis weight results of the Institute and those of a given mill on corresponding samples is three per cent for the current period. By comparison, the maximum percentage variation noted for the previous two periods was four per cent. Further, it may be noted that the average basis weight results for Mills B, H, I, J, M, N, and Q are higher than those for the Institute, the average result for Mill K is the same and the average results for the other mills are lower. None of the variations for the current period appear to be excessive.

The maximum variation in caliper for the current period is six per cent. This variation is slightly greater than the maximum variation of five per cent for the previous two periods. Compared with the Institute's test results, the test results for all mills are lower with the exception of the result for Mill S which is the same. The variations for Mills D and H appear to be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of eight per cent for the current period. The average results for Mills A, J, K, N, and Q are higher than those for the Institute, the average result for Mill E is the same, and the results for the other mills are lower. Only the variations associated with the results for Mills H, M, and O appear to be excessive.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills A, B, E, H, K, L, N, Q, and S are higher than those for the Institute, and the results for the other mills are lower. The maximum variation for the current period is twelve per cent. The variations which exceed a magnitude of ten per cent may be excessive. Mills in this category include A and B.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills A, B, D, E, H, J, K, L, M, N, Q, and S are higher than those for the Institute, and the average results for the other mills are lower. The maximum variation for the current period is sixteen per cent. The variations noted for Mills A, B, H, and Q exceed ten per cent and appear to be excessive.

TABLE XXIII
SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS)

Mills*	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S
No. Samples Compared	1	4	0	6	8	0	0	10	9	3	8	7	11	8	8	3	8	4
	<u>Basis Weight</u>																	
Institute	42.8	41.6		42.3	42.8			42.2	42.9	42.8	43.1	42.7	43.5	42.2	42.5	43.1	42.6	44.0
Mill	42.5	41.7		42.1	42.6			43.3	43.2	42.9	43.1	42.5	43.6	42.7	42.0	42.9	42.9	43.6
Av. Diff.**	-0.3	+0.1		-0.2	-0.2			+1.1	+0.3	+0.1	0.0	-0.2	+0.1	-0.5	-0.5	-0.2	+0.3	-0.4
Max. Diff.***	-0.3	+0.3		-0.4	-1.0			+1.7	+1.0	+0.2	+0.8	-0.9	+0.6	+0.9	-1.6	-0.9	+0.7	-0.6
	<u>Caliper</u>																	
Institute	13.7	11.8		13.2	12.6			13.6	12.4	13.0	12.6	12.7	12.5	12.2	13.1	12.0	13.2	13.0
Mill	13.0	11.5		12.4	12.4			12.8	12.2	12.6	12.2	12.2	12.2	11.9	12.8	11.5	12.8	13.0
Av. Diff.**	-0.7	-0.3		-0.8	-0.2			-0.8	-0.2	-0.4	-0.4	-0.5	-0.3	-0.3	-0.3	-0.5	-0.4	0.0
Max. Diff.***	-0.7	-0.5		-1.0	-0.5			-1.2	-0.5	-0.6	-0.6	-0.7	-0.7	-0.4	-0.8	-0.6	-0.6	-0.1
	<u>Bursting Strength</u>																	
Institute	110	106		112	109			109	110	100	113	116	114	114	119	114	108	113
Mill	111	104		108	109			102	108	104	114	111	107	118	110	110	111	112
Av. Diff.**	+1	-2		-4	0			-7	-2	+4	+1	-5	-7	+4	-9	-4	+3	-1
Max. Diff.***	+1	-6		-6	+6			-12	-6	+5	+6	-9	-11	+6	-14	-8	+7	+2
	<u>Tearing Strength, in.</u>																	
Institute	305	322		364	331			342	357	311	311	300	340	309	301	366	356	298
Mill	340	360		358	352			349	335	324	324	311	323	320	271	331	371	313
Av. Diff.**	+35	+38		-6	+21			+7	-2	-22	+13	+11	-17	+11	-30	-35	+15	+15
Max. Diff.***	+35	+49		-32	+66			+53	-44	-61	+36	+24	-58	+28	-56	-49	+34	+26
	<u>Tearing Strength, across</u>																	
Institute	347	327		372	376			362	379	375	370	354	379	359	372	385	381	351
Mill	398	379		373	414			413	375	379	374	375	380	370	353	378	425	380
Av. Diff.**	+51	+52		+1	+38			+51	-4	+4	+4	+21	+1	+11	-19	-7	+44	+29
Max. Diff.***	+51	+59		+9	+57			+74	-40	-43	+15	+45	-41	+30	-41	-31	+59	+41

* Comparison based on averages involved only those samples on which mill test data were submitted.

** Average difference is the difference between the Institute mill average and the mill average based on mill test data.

*** Maximum difference encountered in comparing the Institute average and the mill average for any sample submitted by that particular mill.

TABLE XXIV

COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS
Average Difference, per cent

Mill	Period	Basis Weight	Caliper	Burst	Tear, in	Tear, across	Mill	Period	Basis Weight	Caliper	Burst	Tear, in	Tear, across
A	Current	-0.7	-5	+0.9	+11	+15	J	Current	+0.2	-3	+4	-6	+1
	121st	-2	-3	-4	+3	+7		121st	+0.2	-4	+2	-6	-1
	120th	0	-3	-3	+5	+8		120th	-0.2	-4	+3	-8	+2
B	Current	+0.2	-3	-2	+12	+16	K	Current	0	-3	+0.9	+4	+1
	121st	-2	-2	-0.9	+10	+12		121st	-1	-2	0	+4	+5
	120th	-0.9	-2	0	+5	+10		120th	-0.9	-0.8	-3	+8	+7
C	Current	--	--	--	--	--	L	Current	-0.5	-4	-4	+4	+6
	121st	+0.7	-3	-4	+8	+19		121st	+3	-4	-2	+3	+2
	120th	0	-4	-4	+14	+25		120th	+0.2	-5	-2	+0.6	+2
D	Current	-0.5	-6	-4	-2	+0.3	M	Current	+0.2	-2	-6	-5	+0.3
	121st	-0.9	-5	-0.9	-2	-3		121st	+0.9	-2	-7	-5	+3
	120th	-0.2	-4	-2	-3	-3		120th	+0.2	-4	-7	-3	+0.3
E	Current	-0.5	-2	0	+6	+10	N	Current	+1	-2	+4	+4	+3
	121st	+0.5	-0.8	+0.9	+10	+11		121st	+1	-2	0	+1	-2
	120th	-0.9	-2	-0.9	+9	+5		120th	+0.9	-2	+0.9	+4	+2
F	Current	--	--	--	--	--	O	Current	-1	-2	-8	-10	-5
	121st	-0.2	+0.9	-3	-12	-3		121st	-0.5	-3	-3	-9	-2
	120th	+0.5	-0.8	-12	-10	-6		120th	-2	-3	-5	-12	-4
G	Current	---	--	--	--	--	P	Current	-0.5	-4	-4	-10	-2
	121st	--	--	--	--	--		121st	--	--	--	--	--
	120th	--	--	--	--	--		120th	-0.5	-4	-5	-6	-2
H	Current	+3	-6	-6	+2	+14	Q	Current	+0.7	-3	+3	+4	+12
	121st	+3	--	-2	+5	+13		121st	+4	0	+5	+6	+6
	120th	+2	-4	-6	+11	+12		120th	+0.7	-2	+0.9	+10	+15
I	Current	+0.7	-2	-2	-0.6	-1	S	Current	-0.9	0	-0.9	+5	+8
	121st	+0.5	-2	0	-3	0		121st	-0.2	+0.8	-0.9	+8	+6
	120th	-0.5	-0.8	-2	+0.6	+0.8		120th	-0.2	0	-4	+9	+13

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957

TABLE XXV

MILL A -- 42-LB. LINERBOARD

File No.	Frush No.	Date Made	Mch. No.	Basis Weight lb.		Caliper, points		Bursting Strength, P.s.i. Edge		Elmendorf tear, g./sheet					
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across	IPC	Mill Diff.		
175441	WFLS	8/10/57	1	42.8	-0.3	13.7	13.0 -0.7	110	111 + 1	305 ^a	340	+35	347 ^a	398	+51
Current Mill Average.				42.8	-0.3	13.7	13.0 -0.7	110	111 + 1	305	340	+35	347	398	+51

TABLE XXVI

MILL B -- 42-LB. LINERBOARD

175212	W.F.	7/18/57	-	40.9	-0.1	11.7	11.5 -0.2	96	98 + 2	324	339	316 ^a	349	+33
175213	W.F.	7/18/57	-	41.8	+0.1	12.0	11.5 -0.5	97	98 + 1	327 ^a	376	331 ^a	389	+58
175392	W.F.	7/31/57	-	42.0	+0.2	11.7	11.5 -0.2	113	110 - 3	334 ^a	375	329 ^a	388	+59
175393	W.F.	8/1/57	-	41.8	+0.3	11.9	11.6 -0.3	116	110 - 6	305 ^a	352	333 ^a	390	+57
Current Mill Average:				41.6	+0.1	11.8	11.5 -0.3	106	104 - 2	322	360	327	379	+52

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXVII

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. edge		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across

No samples submitted.

TABLE XXVIII

MILL D -- 42-LB. LINERBOARD

175199	W.	7/ 1/57	4	42.9	42.5	-0.4	13.7	12.8	-0.9	111	105	- 6	361 ^a	369	+ 8	361 ^a	361	0
175200	W.	7/ 8/57	2	42.2	42.2	0.0	13.2	12.2	-1.0	111	109	- 2	353	347	- 6	372 ^a	373	+ 1
175239	W.	7/24/57	4	42.2	41.9	-0.3	13.0	12.3	-0.7	109	104	- 5	397 ^a	365	-32	369 ^a	367	- 2
175240	W.	7/29/57	2	41.8	41.5	-0.3	12.8	12.2	-0.6	110	106	- 4	373	349	-24	372 ^a	381	+ 9
175442	W.	8/ 1/57	2	42.0	42.1	+0.1	13.0	12.4	-0.6	113	112	- 1	347 ^a	359	+12	397 ^a	392	- 5
175443	W.	8/ 6/57	4	42.4	42.5	+0.1	13.3	12.7	-0.6	116	111	- 5	350 ^a	356	+ 6	361 ^a	365	+ 4
Current Mill Average:				42.3	42.1	-0.2	13.2	12.4	-0.8	112	108	- 4	364	358	- 6	372	373	+ 1

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i.		Elmendorf Tear, g./sheet		Across	
				IPC	Mill	Diff.	IPC	Mill	Diff.	In	Diff.	IPC	Mill
175203	WFLS	7/22/57	1	42.9	42.4	-0.5	13.0	12.5	-0.5	102	108	348 ^a	400
175204	WFLS	7/23/57	1	42.9	42.8	-0.1	12.9	12.7	-0.2	105	106	332 ^a	403
175233	WFLS	7/26/57	1	42.0	42.4	+0.4	12.0	12.1	+0.1	109	109	315	437
175234	WFLS	7/30/57	1	42.0	42.5	+0.5	11.9	11.9	0.0	112	110	316 ^a	435
175450	WFLS	8/15/57	1	42.0	42.8	+0.8	11.8	11.9	+0.1	112	110	301 ^a	406
175471	WFLS	8/19/57	1	43.7	42.7	-1.0	13.0	12.7	-0.3	109	108	357	415
175472	WFLS	8/20/57	1	43.1	42.7	-0.4	13.0	12.6	-0.4	108	108	343	411
175473	WFLS	8/20/57	1	43.5	42.8	-0.7	13.0	12.8	-0.2	112	109	334	406
Current Mill Average.				42.8	42.6	-0.2	12.6	12.4	-0.2	109	109	331	414
											+21	376	+38

TABLE XXX

MILL F -- 42-LB. LINERBOARD

No samples submitted.

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

File No.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, P.S.I., gage			Elmendorf Tear, g./sheet						
			IPC		Diff.	IPC		Diff.	IPC		Diff.	IPC		Diff.				
			Mill	Diff.		Mill	Diff.		Mill	Diff.		Mill	Diff.					
175230	W.F.	7/31/57	-	42.0	42.2	+0.2	12.7	12.2	-0.5	104	105	+1	324	329	+5	361 ^a	381	+20
175231	W.F.	8/1/57	-	43.2	43.5	+0.3	12.8	12.6	-0.2	107	106	-1	361 ^a	377	+16	384 ^a	387	+3
175232	W.F.	8/2/57	-	44.2	44.6	+0.4	12.2	12.3	+0.1	105	102	-3	325	361	+36	381 ^a	391	+10
175389	W.F.	8/7/57	-	45.2	45.0	-0.2	13.0	12.9	-0.1	113	108	-5	343	348	0	393 ^a	388	-5
175390	W.F.	8/8/57	-	41.9	41.5	-0.4	11.8	11.8	0.0	114	109	-5	344 ^a	332	-12	373 ^a	365	-14
175391	W.F.	8/9/57	-	43.0	43.2	+0.2	12.3	12.1	-0.2	110	108	-2	337 ^a	336	-1	371 ^a	371	0
175451	W.F.	8/14/57	-	42.3	43.0	+0.7	12.0	11.9	-0.1	117	114	-3	361 ^a	357	-4	383 ^a	369	-14
175452	W.F.	8/15/57	-	42.3	42.4	+0.1	12.2	12.0	-0.2	114	108	-6	351 ^a	307	-44	392 ^a	352	-40
175453	W.F.	8/16/57	-	42.1	43.1	+1.0	12.1	11.9	-0.2	109	109	0	327 ^a	309	-18	362 ^a	367	-2
Current Mill Average:				42.9	43.2	+0.3	12.4	12.2	-0.2	110	108	-2	342	340	-2	379	375	-4

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

175209	S.F.	7/22/57	7	43.0	43.2	+0.2	12.9	12.4	-0.5	96	101	+5	336 ^a	339	+3	365 ^a	381	+16
175362	S.F.	8/6/57	7	42.6	42.8	+0.2	13.1	12.5	-0.6	106	110	+4	377 ^a	316	-61	403 ^a	360	-43
175467	S.F.	8/15/57	7	42.9	42.8	-0.1	13.2	12.9	-0.3	97	100	+3	357 ^a	351	-6	359 ^a	397	+38
Current Mill Average:				42.8	42.9	+0.1	13.0	12.6	-0.4	100	104	+4	357	335	-22	375	379	+4

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, P.s.i. gage		Elmendorf Tear, g./sheet								
				IPC		IPC		IPC		IPC		IPC						
				Mill	Diff.	Mill	Diff.	Mill	Diff.	Mill	Diff.	Mill	Diff.	Mill	Diff.			
175210	W.F.	7/21/57	2	43.6	43.0	-0.6	12.8	12.4	-0.4	111	113	-2	319 ^a	310	-9	365 ^a	379	+14
175211	W.F.	7/22/57	2	43.7	43.1	-0.6	12.6	12.3	-0.3	115	112	-3	330 ^a	311	-19	399 ^a	385	-14
175244	W.F.	7/29/57	1	41.8	42.0	+0.2	12.4	12.0	-0.4	111	114	-3	315 ^a	324	+9	355 ^a	349	-6
175245	W.F.	7/29/57	2	43.0	42.8	-0.2	12.3	12.1	-0.2	109	115	+6	288 ^a	324	+36	349 ^a	364	+15
175347	W.F.	8/4/57	2	43.2	43.4	+0.2	12.8	12.3	-0.5	115	116	+1	315 ^a	342	+27	380 ^a	382	+2
175348	W.F.	8/4/57	2	42.6	43.4	+0.8	12.8	12.2	-0.6	112	114	+2	304	337	+33	377 ^a	380	+3
175448	W.F.	8/11/57	2	43.4	43.5	+0.1	12.6	12.2	-0.4	114	114	0	329	320	-9	357 ^a	366	+9
175449	W.F.	8/11/57	2	43.7	43.5	-0.2	12.6	12.3	-0.3	115	114	-1	288	323	+35	375 ^a	388	+13
Current Mill Average:				43.1	43.1	0.0	12.6	12.2	-0.4	113	114	+1	311	324	+13	370	374	+4

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXXVI

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis weight,			Caliper, points,			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet			Across	
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill
175235	wFLS	7/27/57	1	44.1	44.0	-0.1	13.4	12.9	-0.5	114	111	-3	319 ^a	343	+24	345 ^a	385
175236	wFLS	7/29/57	1	42.6	43.2	+0.6	12.9	12.7	-0.2	118	109	-9	300	320	+20	352 ^a	397
175237	wFLS	7/30/57	1	43.0	43.2	+0.2	12.4	12.2	-0.2	124	118	-6	301	308	+7	351 ^a	376
175335	wFLS	8/ 5/57	3	41.7	40.8	-0.9	12.2	11.7	-0.5	114	109	-5	296	287	-9	341 ^a	353
175336	FLS	8/ 6/57	1	42.0	41.5	-0.5	12.2	11.7	-0.5	117	115	-2	279 ^a	283	+4	342 ^a	357
175337	wFLS	8/ 7/57	1	42.6	41.7	-0.9	12.2	11.7	-0.5	112	105	-7	281 ^a	297	+16	337 ^a	363
175423	wFLS	8/13/57	1	43.1	43.2	+0.1	13.4	12.7	-0.7	114	107	-7	324	337	+13	408 ^a	393
Current Mill Average:				42.7	42.5	-0.2	12.7	12.2	-0.5	116	111	-5	300	311	+11	354	375

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXXVII

MILL M -- 42-LB. LINERBOARD

File no.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across
										Mill	Mill
										Diff.	Diff.
175208	W.F.	7/23/57	-	44.8	44.3 -0.5	12.9	12.2 -0.7	108	106 -2	378 ^a	364 ^a
175219	W.F.	7/25/57	-	43.1	42.6 -0.5	12.1	11.8 -0.3	113	106 -7	351	380
175241	W.F.	7/28/57	-	42.2	42.5 +0.3	12.4	12.3 -0.1	110	106 -4	325	367
175242	W.F.	7/27/57	-	42.3	42.7 +0.4	12.5	12.1 -0.4	112	104 -8	353 ^a	383
175243	W.F.	7/27/57	-	44.9	45.2 +0.3	12.6	12.1 -0.5	123	118 -5	325	405
175351	W.F.	7/30/57	-	43.3	43.6 +0.3	13.0	12.8 -0.2	107	96 -11	356 ^a	367
175352	W.F.	7/30/57	-	43.0	43.6 +0.6	12.5	12.4 -0.1	119	109 -10	303 ^a	359
175353	W.F.	8/5/57	-	43.1	43.7 +0.6	12.2	11.8 -0.4	116	108 -8	332 ^a	381
175354	W.F.	8/6/57	-	44.1	44.4 +0.3	12.4	12.0 -0.4	117	106 -11	344 ^a	389
175355	W.F.	8/6/57	-	43.7	44.0 +0.3	12.4	12.2 -0.2	114	104 -10	336 ^a	384
175470	W.F.	8/9/57	-	43.4	43.3 -0.1	12.3	12.3 0.0	117	112 -5	345	397
Current Mill Average.				43.5	43.6 +0.1	12.5	12.2 -0.3	114	107 -7	340	380
										323	+1

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note. All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXXVIII

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Men. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. Range		Elmendorf Tear, g./sheet	
				IPC	Mill Diff.	IPC	Mill Diff.	IPC	Mill Diff.	In	Across
175214	W.F.	7/16/57	2	42.0	+0.9	11.9	-0.1	115	+4	303	369
175215	W.F.	7/16/57	2	42.3	+0.7	12.0	-0.4	112	+4	313 ^a	372
175248	W.F.	7/25/57	2	42.8	-0.3	12.3	-0.2	118	+4	305 ^a	386
175249	W.F.	7/27/57	2	42.1	+0.5	12.2	-0.2	115	+5	317	377
175365	W.F.	7/27/57	2	42.5	+0.5	12.3	-0.2	116	+6	304	381
175366	W.F.	7/29/57	2	42.3	+0.3	12.3	-0.3	114	+5	319 ^a	382
175367	W.F.	8/ 2/57	2	41.8	+0.2	12.2	-0.4	114	-2	315	343
175368	W.F.	8/ 5/57	2	41.6	+0.6	12.3	-0.4	111	+3	296	353
Current Mill Average:				42.2	+0.5	12.2	-0.3	114	+4	309	370
											+11

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XXXIX

MILL 0 -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		In		Elmendorf Tear, g./sheet		Across	
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
175349	W.F.	6/25/57	1	43.1	42.1	-1.0	13.6	13.2	-0.4	108	109	+1	320 ^a	268	-19
175350	W.F.	6/30/57	1	43.7	43.0	-0.7	13.3	13.0	-0.3	123	115	-8	312	288	-24
175444	W.F.	7/25/57	1	43.7	42.1	-1.6	13.8	13.0	-0.8	124	110	-14	317	261	-56
175445	W.F.	7/27/57	1	41.8	41.8	0.0	12.4	12.7	+0.3	117	107	-10	276	278	+2
175446	W.F.	7/30/57	1	42.2	41.7	-0.5	13.5	12.9	-0.6	126	113	-13	297	261	-36
175447	W.F.	8/2/57	1	41.7	41.8	+0.1	13.0	12.7	-0.3	115	108	-7	297 ^a	281	-16
175474	--	8/5/57	-	42.2	41.8	-0.4	12.4	12.3	-0.1	122	109	-13	288	277	-11
175475	--	8/8/57	-	42.0	41.6	-0.4	12.9	12.4	-0.5	119	110	-9	299 ^a	251	-48
Current Mill Average:				42.5	42.0	-0.5	13.1	12.8	-0.3	119	110	-9	301	271	-30
													372	353	-19

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note. All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XI

MILL P -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.		Caliper, points		Bursting Strength, p.s.i. gage		In		Elmendorf Tear, g./sheet		Across	
				IPC	Mall	Diff.	IPC	Mall	Diff.	IPC	Mall	IPC	Mall	IPC	Mall
175238	W.B.	7/20/57	-	44.2	43.3	-0.9	12.2	11.6	-0.6	116	110	-6	357 ^a	308	343
175272	W.B.	7/26/57	-	42.4	42.4	0.0	11.6	11.1	-0.5	118	110	-8	375 ^a	349	388
175273	W.B.	7/27/57	-	42.6	43.0	+0.4	12.2	11.9	-0.3	108	111	+3	365	336	403
Current mill average.				43.1	42.9	-0.2	12.0	11.5	-0.5	114	110	-4	366	331	378

TABLE XII

MILL Q -- 42-LB. LINERBOARD

175201	W.F.	7/21/57	2	42.0	42.1	+0.1	13.5	13.0	-0.5	101	108	+7	375 ^a	378	414
175202	W.F.	7/22/57	2	42.5	42.2	-0.3	13.5	13.0	-0.5	104	108	+4	365	387	428
175246	W.F.	7/28/57	2	42.3	42.5	+0.2	12.6	12.1	-0.5	113	116	+3	327	343	420
175247	W.F.	7/29/57	2	41.9	42.3	+0.4	12.4	12.1	-0.3	118	119	+1	320	354	414
175363	W.F.	8/4/57	2	42.8	42.8	0.0	13.5	13.1	-0.4	108	110	+2	373 ^a	389	430
175364	W.F.	8/5/57	2	41.7	42.4	+0.7	13.4	13.2	-0.2	106	109	+3	349 ^a	370	406
175454	W.F.	8/12/57	2	44.0	44.4	+0.4	13.5	13.0	-0.5	106	110	+4	365 ^a	368	438
175455	W.F.	8/13/57	2	44.0	44.3	+0.3	13.6	13.0	-0.6	106	111	+5	373 ^a	380	449
Current Mill Average				42.6	42.9	+0.3	13.2	12.8	-0.4	108	111	+3	356	371	425

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--AUGUST 1 THROUGH AUGUST 31, 1957 (continued)

TABLE XLII

MILL S -- 42-LB. LINERBOARD

File no.	Finish	Date made	Mch. no.	Basis Weight,		Caliper, points		Bursting Strength, p.s.i. gage		In		g./sheet		Across	
				IPC	Diff.	IPC	Diff.	IPC	Diff.	IPC	Diff.	IPC	Diff.	IPC	Diff.
175198	W.F.	7/23/57	1	44.2	-0.6	13.0	13.0	113	112	309 ^a	315	6	349 ^a	379	+30
175274	A.F.	7/29/57	1	44.0	-0.2	13.0	-0.1	114	112	297 ^a	309	+12	338 ^a	379	+41
175275	W.F.	8/2/57	1	44.0	-0.6	13.0	-0.1	112	114	286 ^a	312	+26	355 ^a	363	+8
175301	A.F.	8/6/57	1	43.8	-0.3	13.1	-0.1	113	111	295	315	+16	360 ^a	397	+37
Current Mill Average.				44.0	-0.4	13.0	0.0	113	112	298	313	+15	351	380	+29

TABLE XLIII

MILL R -- 42-LB. DRUM LINERBOARD

No samples submitted.

^aThis average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note. All "current mill average" data are calculated from the totals of the individual readings.